



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant(s): Uwe BOTTCHER

Examiner: Peterson, Kenneth E.

Appln. No.: 10/519,284

Group Art Unit 3724

Filing Date: December 27, 2004

For           **AN APPARATUS AND A METHOD FOR CLEAVING THIN RODS**

**MAIL STOP AF**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**Declaration**

Sir:

I, Uwe Bottcher, do hereby declare:

1. I am the inventor of the invention being claimed in the above-identified application;
2. I have read and understand the Final Office Action mailed February 28, 2008 by the Patent and Trademark Office in the above-identified application, including the art being applied against the claims, U.S. Pat. Nos. 4,790,465 to Fellows et al and 6,000,310 to Shilkret et al;
3. It has been surprisingly discovered by me cleaving thin rods of glass or quartz of diameter below 1 mm. to form optical fibers actually improves when operating a cleaving blade at much lower frequencies than commonly used in the art. Experiments carried out under my direction and control, establish improved flatness of cleaved fiber end surfaces over prior art cleaving operation at higher frequencies. Cleaving of the fibers improves with operational costs being minimized. It is believed such improvement arises from increased probability fiber parts are cut after being hit only once by the blade, so additional hits by the blade which would degrade the fiber end surfaces can be avoided. Furthermore, it is easier to create the lower frequencies in the cleaving blade which result in less problem with harmonics;
4. Fellows et al disclose cleaving thin rods of glass or quartz by a blade vibrating with a frequency ranging from about 1kHz up to about 100 kHz, with frequencies above 70 kHz actually being used by Fellows et al. which explicitly state, at column 3, lines 1-22, blade oscillation frequency must be on the order of kilohertz to minimize intrusion

into the optical fiber upon impact. In other words, Fellows et al teach me, one skilled in the art, it is not possible to effectively cleave thin rods of glass or quartz of diameter below 1 mm. using frequencies below 1 kHz. However, I have surprisingly found contrary to the teachings of Fellows et al, such cleaving actually improves when operating at much lower frequencies than taught by Fellows et al;

5. Shilkrut et al are primarily directed to drilling concrete (column 1, lines 34-39) and only mentions, in one embodiment (Fig. 29), a shearing mechanism for cutting carpets, etc. (column 15, lines 15-17). Generating thin optical fibers is not mentioned in Shilkrut et al. The frequencies disclosed at column 16, line 23 of Shilkrut et al relate to the devices shown in Figs. 14, 17 and 18, i.e., a drilling tool, as do the frequencies disclosed at column 3, line 7 of Shilkrut et al. Accordingly, there is no suggestion to me, one skilled in the art, from Shilkrut et al of utilizing such frequencies to cleave thin rods of a particular type, i.e., thin rods of glass or quartz of diameter below 1 mm. used to form optical fibers;

6. Therefore, Shilkrut et al are so remote to the technique of cleaving thin rods of glass or quartz of diameter below 1 mm. to form optical fibers, as one skilled in the art, I would not even consider Shilkrut et al in seeking the solution attained by the present invention. Furthermore, as noted in paragraph 4 *supra*, Fellows et al explicitly teach away from using the frequencies I surprisingly found improve cleaving thin rods of glass or quartz of diameter below 1 mm. to form optical fibers, contrary to the prevailing wisdom in the art. Accordingly, even if I had both Fellows et al and Shilkrut et al before me, as one skilled in the art I would not even consider combining the teachings of these two references which lead in opposite directions from one another;

7. Thus, the combination of Fellows et al and Shilkrut et al suggests nothing to me, one skilled in the art, about improving cleaving thin rods of glass or quartz of diameter below 1 mm. to form optical fibers by operating within the noted frequency values and, if anything, leads me away from (1) using such operating frequency values to cleave such rods and (2) most certainly investigating such operating frequency values to improve cleaving such rods; and

8. Furthermore, I declare all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true, and further these statements are made with the knowledge willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

2008 06 23

Date

Uwe Bottcher

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